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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,741	06/14/2005	Luca Balconi	05788.0366	5459

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EXAMINER	
LEONG, NATHAN T	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
11/20/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,741	BALCONI ET AL.	
	Examiner	Art Unit	
	NATHAN LEONG	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

Applicant's Arguments/Remarks filed 9/4/2008 are acknowledged. Claims 14-26 are currently pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 14-19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belli et al WO 99/33070 in view of Harlin et al WO 01/38060 A1.

Claims 14-26 are drawn to the method of producing a cable, where the cable has at least one transmissive element and an expanded and cross-linked coating layer. The method is comprised of steps of extruding the coating composition, forming a coating layer made of expandable and cross-linkable polymeric material, expanding and cross-

linking the material by heating the coating layer at atmospheric pressure with a heating fluid.

Per claim 14, Belli teaches the method of producing an electrical cable comprising a conductor (transmissive element, see pg. 5, lines 10-11), comprising an expanded semiconductive layer (the coating layer, pg. 5, lines 13-15) in a radially outer position with respect to the cable, that may be made of cross-linkable material and cross-linked (pg. 13, lines 8-15). The cable composition is made by an extrusion process (pg. 11, lines 22-30), where the expansion step is also carried out (pg. 12, lines 6-20). The cross-linking and expanding steps of the coating are carried out under heat (pg. 13, lines 11), by a heating fluid in the extruder.

Per claims 15 and 16, Belli teaches using an extruder rotation speed of 1.2 rpm, equivalent to a speed of 1.2 m/min, or 72 m/s, which would cause the heating fluid within the extruder to circulate at about 72 m/s. Per claim 17, Belli teaches using an extrusion temperature that is greater than 140°C, for example, in the range of 160-200°C (pg. 13, lines 3-8, and Example 3). Per claim 18, Belli teaches using inert gases such as nitrogen, or air, as the heating fluid (pg. 12, lines 26-31). Per claim 19, teaches a coating layer (the expanded semiconductive layer) containing an expanding agent (pg. 12, lines 21-25) and a cross-linking agent (pg. 13, lines 8-26). Per claims 21 and 22, Belli teaches using dicumyl peroxide as an organic peroxide as the cross-linking agent for the coating composition (pg. 13, lines 8-26). Per claim 23, Belli teaches using mixtures of organic acids, for example citric acid, with carbonates and/or bicarbonates as the expanding agent (pg. 12, lines 21-25).

The wording of claim 24 is not necessarily drawn to using the coating layer as a cooling method for the cable, because it states "cooling said cable provided with said expanded and cross-linked coating layer". Thus, for the purposes of examination, it can be and is interpreted as the method comprising cooling both the cable and coating layer together. Therefore, per claim 24, Belli teaches cooling both the cable along with the expanded coating layer in air (see Example 3). Per claims 25 and 26, Belli teaches having a metal shield around the coating layer (pg. 13, lines 27-35), and further coated with a protective outer sheath (pg. 14, lines 5-9).

Belli fails to explicitly teach operating the expansion and cross-linking steps at atmospheric pressure, as disclosed in claim 14. Harlin teaches the method of cross-linking a layer by curing/heating after extrusion under normal atmospheric pressure (pg. 2, lines 13-16). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the cable forming method taught by Belli with the method taught by Harlin. One would have had motivation to make such a combination because operation at a relatively lower pressure will allow expensive pressure vessels, difficulties associated with starting and stopping overpressure processes, and additional safety concerns to be avoided (pg. 2, lines 7-20).

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Belli et al WO 99/33070 in view of Harlin et al WO 01/38060 A1, as applied to the claims above, further in view of Chaudhary et al US 2001/0002075 A1.

Claim 20 is drawn to the method described above in claim 19, further comprising that the decomposition temperatures of the cross-linking agent and the expanding agent differ by at most 50°C. Belli in view of Harlin teaches all the limitations of claim 19, as discussed above, in addition, teaching a step of maintaining a temperature below the decomposition temperature of the expanding agent, where the agent would expand above said decomposition temperature (see Examples 1-2). Belli in view of Harlin fails to explicitly teach having a maximum decomposition difference of 50°C between the cross-linking agent and expanding agent. Chaudhary teaches the importance of the decomposition temperature in the cross-linking process by also maintaining operating temperature based on the decomposition temperature of the cross-linking agent [0011]. Since Belli teaches a coating layer using both an expanding agent and a cross-linking agent together, it would be obvious to one of ordinary skill in the art at the time of the invention to know and utilize the decomposition temperature of the expanding agent taught by Belli and the decomposition temperature of the cross-linking agent taught by Chaudhary so that the cross-linking step and the expansion step could be done together because this would present a more efficient scenario where only one heating step, instead of two, are needed. One of ordinary skill in the art at the time of the invention would realize that in order to have both the cross-linking step and the expansion step occur together, the difference between the decomposition temperatures of the two respective agents would have to be relatively close together. One of ordinary skill in the art at the time of the invention would have the knowledge and desire to optimize the process to yield the best results. Thus, claim 19 comprising the limitation of a 50°C

difference between the cross-linking agent and the expanding agent is not patentably distinct over the prior art.

Response to Arguments

Applicant's arguments filed 9/4/2008 have been fully considered but they are not persuasive.

In regards to applicant's arguments on page 4, paragraph 2, although Belli is silent to the pressure that the extrusion step is performed at, the fact that an extrusion process for a similar method was known and taught in the prior art by Harlin would have been evidence that one of ordinary skill would have known how to operate an extruder for this method at atmospheric pressure, if desired. In addition, there is no evidence presented by Applicant, Belli, or Harlin that shows that that the proposed combination of teachings of Belli and Harlin could not be combined with a reasonable expectation of success.

In regards to applicant's arguments on page 4, paragraph 3, Belli does in fact teach expanding being carried out by heating, as the extruding process is performed at an elevated temperature and that temperature depends on the desired degree of expansion of the polymer (see Belli, pg. 13, lines 3-7).

In regards to applicant's arguments on page 4, paragraph 4 to page 6, end of paragraph 1, the phrase "heating [...] by a heating fluid" as claimed can be interpreted as air, for example in pg. 12, lines 26-33, and any other gaseous elements within the extruder at an elevated temperature surrounding the polymer. One of ordinary skill would appreciate that the mere teaching that the expansion and cross-linking step are

performed under an elevated temperature/heated, unless performed in a perfect vacuum, would result in convective heating of the polymer by the air or other gaseous materials surrounding the polymer. Belli teaches explicitly that air be injected into the extruder. One of ordinary skill would acknowledge that air within the extruder would rise in temperature and thus, be considered a heating fluid. In addition, Belli pg. 13, lines 3-9, teach that temperature within the extruder depends on the desired degree of expansion, which further supports that heating influences the expansion of the polymer. Likewise, as acknowledged by Applicant, Belli teaches cross-linking the polymer *by heating*. As mentioned above, the heating fluid limitation as claimed by applicant is met because the air around the polymer would be considered a heating fluid as it would aid in transferring heat to the polymer.

In regards to applicant's arguments on page 6, end of paragraph 1, Harlin is used as a reference to teach operating the extrusion process at normal atmospheric pressure, and there would have been motivation to combine this with the teachings of Belli. Although Harlin mentions the disadvantages of using certain convective heating methods involving steam and salt melts, the argument is irrelevant because Belli teaches neither. The argument that Harlin teaches away from its combination with Belli is incorrect.

In regards to applicant's arguments on page 6, paragraph 2, applicant argues that Harlin teaches heating only the peroxide in the polymer mass, and teaches away from heating the entire polymer material. Harlin teaches that heating only the peroxide would allow one to operate the extruder at a lower temperature, thus saving energy

costs. However, as mentioned above, only the extrusion process of Harlin was referenced in the office action, not any subsequent steps. As far as the effect of this cross-linking step on that of the extruder, Harlin teaches having an extruder temperature profile very similar to that of Belli (see Harlin, pg. 7, lines 1-3). One of ordinary skill would be able to combine the extruder process operating at normal atmospheric pressure taught by Harlin with the process taught by Belli with a reasonable expectation for success. Harlin may teach away from heating "the entire polymer material" in the cross-linking process after the extrusion, but this does not at all teach away from the combination of Belli and Harlin. Whether "*part*" or "*the entire*" polymeric material is heated to be cross-linked is irrelevant.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN LEONG whose telephone number is (571)270-5352. The examiner can normally be reached on Monday to Friday, 7:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NATHAN LEONG/
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792